# Regulatory Redistribution in the Market for Health Insurance

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**Abstract**

In the early 1990s, several U.S. states enacted community rating regulations to equalize the private health insurance premiums paid by the healthy and the sick. Consistent with severe adverse selection pressures, I find that their private coverage rates fell by 8-11 percentage points more than rates in comparable markets over subsequent years. By the early 2000s, however, much of these losses had been recovered. The recoveries were coincident with substantial public insurance expansions (for unhealthy adults, pregnant women, and children) and were largest in the markets where public coverage of unhealthy adults expanded most. The analysis highlights an important linkage between the incidence of public insurance programs and redistributive regulations. When targeted at the sick, public insurance expansions can relieve the distortions associated with premium regulations, potentially crowding in private coverage. Such expansions will look particularly attractive to participants in community-rated insurance markets when a federal government shares in the cost of local public insurance programs.

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In many important markets, regulations play redistributive roles more commonly associated with tax-financed transfer programs. Prominent examples include use of the minimum wage and rent control to increase earnings or reduce prices for those with low incomes. This paper focuses on the use of premium regulations to reduce the cost of insurance for the sick.

The potential for regulations to serve tax-like functions has long been appreciated (Posner, 1971), as has their capacity to generate social insurance transfers (Lee and Saez, 2008; Glaeser and Scheinkman, 1998; Finkelstein, Poterba, and Rothschild, 2009; Lindbeck, 1985). Past work typically analyzes these regulatory policies in isolation, saying little about how they interact with their tax-financed counterparts.[1] Yet regulatory and tax-financed transfer efforts are almost invariably used in concert.[2] The Patient Protection and Affordable Care Act (PPACA) illustrates the point, as it simultaneously expands the use of redistributive regulations, insurance purchase subsidies, and public insurance through Medicaid.[3]

This paper analyzes the relationship between Medicaid expansions and regulations known as community rating and guaranteed issue rules. By preventing insurance companies from denying coverage (guaranteed issue) or charging differential premiums (community rating) on the basis of pre-existing conditions, these regulations generate within-market transfers from the healthy to the sick. They may also lead to adverse selection, since the healthy can escape these transfers by reducing or dropping their coverage (Rothschild and Stiglitz, 1976; Buchmueller and DiNardo, 2002).

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[1]The prior literature on premium regulations, for example, makes scant mention of public insurance programs. A joint analysis of the minimum wage and wage subsidy policies by Lee and Saez (2008) is a notable exception.

[2]Labor market interventions include the minimum wage, wage subsidies, and direct public employment, for example, while housing market interventions include rent control, rental subsidies and public housing projects.

[3]Fine legal lines between the regulatory and tax powers of the federal government ultimately proved pivotal in determining the PPACA's constitutionality.

In a straightforward incidence framework, I show in Section 1 that community rating has two novel implications for Medicaid expansions. The first implication relates to the effect of Medicaid expansions on private market coverage. When Medicaid expansions target those with high health costs, they can relieve adverse selection pressures.[4] This reduction in community rating's distortions drives the possibility that, when targeted at the sick, Medicaid expansions can *crowd in* private coverage. This contrasts with the usual expectation that public coverage will partially crowd private coverage out (Cutler and Gruber, 1996).[5]

The second implication is that, when the federal government shares in Medicaid's cost, a targeted Medicaid expansion can increase the welfare of *private* insurance purchasers. With sufficiently generous cost sharing, private insurance purchasers can experience increases in their income net of tax payments and insurance premiums when the costs associated with the sick are shed onto federal taxpayers. In standard models of self-interested voting behavior (Downs, 1957), this will translate into broad bases of support for such public insurance expansions.[6]

This cost-shedding result has novel implications for local public finance. In standard settings, states and localities are hindered from engaging in redistributive policies by the forces of fiscal competition (Tiebout, 1956). The wealthy may avoid small jurisdictions that tax progressively, for example, potentially undoing such redistributive efforts

[4]Medicaid can be targeted at unhealthy individuals through eligibility via disability or through income thresholds that explicitly take household medical spending into account. The latter approach is known as a medically-needy income concept. All 7 of the most tightly regulated states (see Table 1) were among the 35 states with Medically-Needy eligibility rules by 2000, with New York accounting for more than one-third of all Medically-Needy enrollment nation wide (Crowley, 2003).

[5]Cogan, Hubbard, and Kessler (2010) find evidence for a related phenomenon driven by asymmetric information within markets that permit premium adjustments due to pre-existing conditions.

[6]A median voter perspective on health-based redistribution at the national level has an interesting characteristic of its own. In contrast with the income distribution, where the "good" of income is concentrated among those at the top, the health-spending distribution is right skewed in the "bad." One might thus expect democratically expressed preferences to tilt in favor of substantial income-based redistribution and in opposition to substantial health-based redistribution.

in general equilibrium (Feldstein and Wrobel, 1998). Similarly, the sick and poor may enter jurisdictions with generous Medicaid and cash-transfer programs, making such redistribution difficult to sustain (Peterson and Rom, 1990; Borjas, 1999).[7] These forces encourage a "race to the bottom" in redistributive policies at the sub-national level (Oates, 1999). I show that, when coupled with federal cost sharing, community rating can turn this race to the bottom into a race to shed costs. The relevant forces will be particularly potent under the PPACA, which federalizes community rating and guaranteed issue rules and increases federal cost sharing in future Medicaid expansions.[8]

After developing the above theoretical results, I use the regulatory experience of the U.S. states to investigate the empirical importance of the relevant forces. Many states imposed some form of premium restrictions on their insurance markets during the early 1990s. A set of New England and Mid-Atlantic states stood out by implementing relatively pure community rating and guaranteed issue regimes in both the individual and small-group insurance markets. Later years ushered in substantial public insurance expansions, driven in part by the 1997 authorization of the State Children's Health Insurance Program (SCHIP). Beyond the SCHIP expansions, several of the most tightly regulated states made extensive use of Medicaid waivers to obtain federal funding for coverage of low-income and medically-needy adults. Public coverage of the disabled also increased significantly during this period.

I develop five new facts describing the evolution of insurance coverage in states that adopted strict regulatory regimes. I first find evidence of far more severe adverse selec-

[7]Peterson and Rom (1990) analyze implications of this "Welfare Magnates" hypothesis with a focus on its implications for state policy making and the location decisions of natives, while Borjas (1999) analyzes the location decisions of immigrants.

[8]Perhaps surprisingly, although purchase mandates work to stave off adverse selection, they may magnify the political economy pressures in favor of targeted public insurance expansions. By increasing the number of participants in the insurance market, mandates increase the number of voters who stand to benefit from shedding the costs associated with the sick onto federal taxpayers.

tion pressures than documented by past research.[9] Relative to the near-zero estimates in past research, I find that, within 3 years of adoption, coverage rates had fallen by 8-11 percentage points in tightly regulated markets relative to control markets. Past work has estimated the average effect of regulations over the years immediately following their implementation. Graphical evidence and dynamic regression estimates show that coverage declines escalate over this period; the medium run decline is thus much larger than the short run decline. This is not surprising, as even the rapid unraveling of a single insurance plan can take multiple years to unfold (Cutler and Reber, 1998).

Facts two through five relate to the interplay between regulations and the incidence of public insurance. The second fact is that, during the late 1990s and early 2000s, several of the tightly regulated states expanded their Medicaid programs much more extensively than the rest of the country. Third, these relatively large Medicaid expansions targeted unhealthy adults to a greater degree than public insurance expansions in other states. Fourth, consistent with a crowd-in effect, public insurance expansions were associated with private coverage recoveries in the tightly regulated markets, but not elsewhere. This resulted in large declines in the fraction of individuals without insurance in these markets. Finally, consistent with the mechanisms described above, the private market recoveries were largest in the states where Medicaid expansions were most effectively targeted at the unhealthy.

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[9]This characterization of past findings may sound surprising given recent debate over the role of the insurance purchase mandate in the PPACA. In the debate over the PPACA, the law's supporters and opponents both tended to assume that insurance markets would severely unravel in the absence of the mandate provision. This view has support in the form of state-specific case studies and anecdotal reports. To the best of my knowledge, however, existing evidence in the peer reviewed economics literature on community rating does not support the typical, strongly stated version of this view. Papers finding near-zero coverage impacts include Buchmueller and DiNardo (2002), Simon (2005), Zuckerman and Rajan (1999), Herring and Pauly (2006), LoSasso and Lurie (2009), Davidoff, Blumberg, and Nichols (2005), Monheit and Schone (2004) and Sloan and Conover (1998). While these papers find little impact on total coverage rates, many nonetheless find evidence of shifts in coverage towards populations with high expected health spending. Several papers in this literature, including Buchmueller and DiNardo (2002), Buchmueller and Liu (2005), and LoSasso and Lurie (2009), find evidence that the implementation of community rating resulted in increases in the market share of Health Maintenance Organizations (HMOs).

the early 1990s, many states adopted some form of community rating and/or guaranteed issue regulations. Community rating rules restrict insurers from adjusting premiums on the basis of an individuals's health status (and, to degrees that vary across states, on the basis of age and other demographic characteristics). Guaranteed issue rules prevent insurance companies from rejecting beneficiaries or limiting their coverage on similar bases.

Table 1 highlights states with at least some experience in community rating, separating them by their classification for this paper's empirical analysis. My criteria for categorizing a state as comprehensively regulated are two-fold. First, it must have modified or pure community rating rules, as defined by GAO (2003), in both its non- and small-group markets. Under pure community rating, premiums are only allowed to vary on the basis of family composition and geography; premium variations due to pre-existing conditions and age are disallowed. Modified community rating allows (limited) premium variations on the basis of age, but disallows the use of pre-existing conditions. Many states allow premiums to vary within prescribed bounds (known as "rating bands") on the basis of pre-existing conditions. In practice, these bands significantly reduce the transfers associated with community rating, hence I do not consider such states to be comprehensively regulated.[17]

The second requirement is that the state must have guaranteed issue rules that go beyond the federal requirements in the 1996 Health Insurance Portability and Accountability Act (HIPAA) and the 1985 Consolidated Omnibus Budget Reconciliation Act (COBRA). This typically involves requiring shorter exclusion periods for pre-existing condi-

[17]Most state rating bands allow premiums to vary by at least 100 percent. For a typical family policy in the non-group market in 2002, this implies premium variation on the order of $4,400 (see, e.g., Bernard and Banthin (2008)). The within-market transfers implied by the rating laws in such states will be much smaller than in states with pure community rating. Even in the minority of states with relatively tight rating bands (e.g., Washington), the implied transfers are on the order of $1,000 less than they would be under a community rating regime.

**Table 1: State Health Insurance Regulations and Public Insurance Programs**

| State | Community Rating | | | | Guaranteed Issue | Public Insurance | |
|---|---|---|---|---|---|---|---|
| | Non-Group | Years Effective | Small-Group | Years Effective | Strict? | High Risk Pool by 2002 | Share of National Population of Children Eligible for Medicaid under 1996 Rules |
| *Panel A: Core sample of states with regimes likely to induce adverse selection* | | | | | | | |
| Kentucky | Comm. Rating | 1996-1998 | Comm. Rating | 1996-1998 | Yes | No | 0.30 |
| Maine | Comm. Rating | 1993- | Comm. Rating | 1993- | Yes | No | 0.29 |
| Massachusetts | Comm. Rating | 1997- | Comm. Rating | 1992- | Yes | No | 0.24 |
| New Hampshire | Comm. Rating* | 1995-2002 | Comm. Rating | 1994-2002 | Yes | No | 0.38 |
| New Jersey | Comm. Rating | 1993- | Comm. Rating | 1994- | Yes | No | 0.22 |
| New York | Comm. Rating | 1993- | Comm. Rating** | 1993- | Yes | No | 0.28 |
| Vermont | Comm. Rating | 1993- | Comm. Rating** | 1993- | Yes | No | 0.45 |
| *Panel B: Additional community rating states with regimes less likely to induce adverse selection* | | | | | | | |
| Colorado | None | n/a | Comm. Rating | 1995- | Yes | Yes | 0.20 |
| Connecticut | None | n/a | Comm. Rating | 1992- | Yes | Yes | 0.36 |
| Maryland | None | n/a | Comm. Rating | 1992- | Yes | No | 0.34 |
| North Carolina | None | n/a | Comm. Rating | 1992- | Yes | No | 0.29 |
| Oregon | Comm. Rating | 1996- | Comm. Rating | 1992- | No*** | Yes | 0.27 |
| Washington | Rating Band* | 1993- | Comm. Rating | 1994- | Yes | Yes | 0.42 |

*Washington and New Hampshire (post repeal of community rating) have relatively tight rating bands, allowing premiums to vary by only 20% within demographic groups on the basis of health. This compares with the remainder of the rating band states that allow premiums to vary anywhere from 50-200% on the basis of health.

**New York and Vermont have pure community rating, which completely prohibits risk-rating on the basis of demographic characteristics as well as health status.

***Oregon is the only state that fails to make the core sample of regulated states due to its lack of a strict guaranteed issue requirement in its non-group market (Lo Sasso and Lurie, 2009) and its small-group market (Simon, 2005).

Sources: Information on state insurance market regulations comes from GAO (2003), Simon (2005), Wachenheim and Leida (2008), and Auerbach and Ohri (2005). The share eligible for Medicaid in 1996 was calculated by the author using imputations from the March Demographic Supplement to the Current Population Survey.

tions and longer periods of continuation coverage for those who lose health insurance due, among other reasons, to loss of employment. Guaranteed issue rules can also vary in terms of the range of products to which they apply, with the strictest regulations requiring guaranteed issue of all insurance products. For categorizing the stringency of a state's guaranteed issue requirements in the small- and non-group markets, I rely on Simon (2005) and LoSasso and Lurie (2009) respectively.

Data from the Medical Expenditure Panel Survey (MEPS) provide a sense for the implications of these regulations for the premiums of healthy households. The premium increases associated with comprehensive regulations are driven in large part by the health spending distribution's right tail. Absent public coverage of high cost households, a family in the bottom quintile of the health spending distribution would, on average, experience a premium increase of nearly 100 percent due to the implementation of pure community rating (from $2,700 to $5,100) if all households purchase insurance.

As shown in Table 1, I classify 7 states as adopting comprehensive regulations. Ordered chronologically, they are Maine, New York, Vermont, New Jersey, New Hampshire, Kentucky, and Massachusetts. Since these states are located in New England and the Mid-Atlantic (with the exception of Kentucky), the empirical work employs methods designed to allay concerns that arise with comparisons across groups of dissimilar states. Adoption years (defined as the first year in which a state's non- and small-group markets were both comprehensively regulated) range from 1993 to 1997. Two of the states, Kentucky and New Hampshire, abandoned their comprehensive regulations during the sample.[18]

[18]Wachenheim and Leida (2007) report that Kentucky's regulations were legislated amidst substantial regulatory and legal uncertainty, with some provisions weakened before their enactment. Insurance companies exited the market in large numbers and repeal of the law began a mere two years after its enactment. Wachenheim and Leida also report that New Hampshire's law was repealed amidst widespread perceptions of declining coverage.

as across the large- and small-group markets. They also allow the difference between large- and small-group markets to differ at baseline across the states.

I estimate equation (9) and its difference-in-differences counterpart to confirm the results, namely a pattern of coverage declines followed by recoveries, obtained from estimating equation (8).[22] I do this with two distinct sets of estimates. The first captures the decline in coverage from the pre-regulation period to its nadir and the second capturing the change in coverage from the nadir to the end of the sample. Guided by the raw data and by results from estimating (8), I use data from 1996 and 1997 to describe the nadir.

The analysis in Section 1 showed that Medicaid expansions can explain private coverage recoveries in community-rated markets when they disproportionately cover high cost individuals. The data allow me to take an additional step towards linking the coverage recoveries to this mechanism. I use the following specification to descriptively estimate the relationship between private coverage and public coverage for unhealthy adults (conditional on the extent of public coverage for healthy adults):

[22]The triple-difference framework may appear to be the superior estimation framework because it explicitly controls for within-state trends. In practice, measurement error results in contamination between the within-state treatment and control groups for two reasons. First, the small- and large-group markets cannot be cleanly segregated using firm-size data from the CPS. Second, not all individuals classified as being on the large-group market (due to a household member's employment at a firm with more than 100 employees) will have access to large-group insurance. Data from the Medical Expenditure Panel Survey (MEPS) suggest that roughly 8 percent of those in families with employment at large firms were not offered employer-provided insurance, putting them on the non-group insurance market. Both sources of measurement error will attenuate the triple-difference estimates towards 0. Additionally, regulations may have spillover effects which impact within-state large-group markets. For example, the regulations may lead insurance companies to leave a state altogether or to raise premiums in the large-group market as a means of cross-subsidizing "loss leader" products in the non- and small-group markets. (The latter behavior could be profit maximizing in states like New York, where HMOs must offer products in the non- and small-group markets if they desire to participate in the large group market.) Such spillovers would also tend to bias results towards zero in the triple-difference framework. On this point, in analysis available on request, I have not found evidence that community rating regulations shifted employment (either in aggregate or selectively of the healthy) away from small firms.

information for years 1987-2006. I focus on individuals in households with at least one child and with at least one full-time employed adult. This places attention on a) families that are active participants in insurance markets and b) the market segments that were most directly affected by changes in Medicaid eligibility over this time period.[27]

The matching and differencing estimation frameworks described in the previous section rely on the standard assumption that the treatment and control groups would have followed parallel trends in the absence of the relevant policy interventions. Since comprehensive regulations were non-randomly adopted, with adoption concentrated in the New England and Mid-Atlantic census regions, this assumption cannot be taken for granted. The summary statistics in Table 2 highlight pre-regulation differences between the treatment and control states that merit further attention. The full samples described in columns 1 and 2 reveal two relevant differences between these groups of states. The first visible difference is that the treatment states had higher rates of Medicaid coverage than did control states (10.5% vs. 7.5%). The second visible difference is that treatment states also had relatively high private coverage rates (73.8% vs. 68.4%). Taken together, these differences resulted in a 7 percentage point difference in the fraction of individuals without insurance during the pre-regulation period (1987 to 1992).[28]

Panels A, D, and G of Figure 1 illustrate that, in spite of these level differences, coverage rates followed parallel pre-regulation trends in the treatment and control states. While this is reassuring, the plausibility of the parallel trends assumption can be bolstered by using matching methods to generate samples that have similar levels as well as trends. Comparisons of the treatment and control groups in samples generated us-

[27]Since community rating regulations treat households with and without children as separate market segments, the limited expansions of Medicaid for childless adults would not have affected premiums for those purchasing family policies.

[28]The sum of the population fractions with private coverage, with Medicaid coverage, and with no insurance exceed 1 because some individuals report being on both Medicaid and private coverage over the course of the year.

**Table 2: Baseline Characteristics of Small- and Non-Group Market Participants in Comprehensive Regulation States and Control States: 1987-1992**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | *Unrestricted Sample* | | *Matched Sample* | | *Policy Neutral Matched Sample* | |
| | States with Comp. Regs. | Control States | States with Comp. Regs. | Control States | States with Comp. Regs. | Control States |
| Variable | Mean (St. Dev.) | Mean (St. Dev.) | Mean (St. Dev.) | Mean (St. Dev.) | Mean (St. Dev.) | Mean (St. Dev.) |
| Private Insurance | 0.738 | 0.684 | 0.737 | 0.756 | 0.837 | 0.845 |
| Private Ins. Propensity Score | 0.746 | 0.675 | 0.745 | 0.744 | 0.803 | 0.798 |
| Uninsured | 0.181 | 0.249 | 0.181 | 0.193 | 0.136 | 0.134 |
| On Medicaid | 0.105 | 0.075 | 0.104 | 0.058 | 0.041 | 0.023 |
| Income as % of Poverty Line | 292 | 270 | 289 | 309 | 355 | 369 |
| | (230) | (227) | (220) | (218) | (213) | (208) |
| Household Size | 4.27 | 4.32 | 4.27 | 4.15 | 4.21 | 4.09 |
| | (1.39) | (1.41) | (1.39) | (1.28) | (1.25) | (1.15) |
| College Educated Adult | 0.531 | 0.503 | 0.529 | 0.599 | 0.597 | 0.666 |
| Black | 0.063 | 0.049 | 0.627 | 0.036 | 0.477 | 0.023 |
| 1 Worker Household | 0.642 | 0.642 | 0.643 | 0.601 | 0.589 | 0.537 |
| Observations | 10053 | 94817 | 10029 | 10029 | 7480 | 7751 |

Sources: Baseline summary statistics were calculated by the author using data from the March Economic and Demographic Supplement to the Current Population Survey for years 1987-1992.

Note: Samples consist of individuals in households with at least one child and one full-time working adult, but with no adults working at a firm that has more than 100 employees. The Comprehensive Regulation states are restricted to New York, Maine, and Vermont, each of which fully implemented its comprehensive regulations in 1993. The "Control" states in Column 2 are all states other than the comprehensive regulation states listed in Panel A of Table 1. A household is defined as having a college educated adult if one of the adults in the household has at least some college education. The samples in columns 3 and 4 are restricted to matched pairs, constructed as described in the text. The samples in columns 5 and 6 are further restricted to exclude individuals in households with incomes less than 133% of the poverty line or headed by single mothers.

ing matching methods can be found in columns 3 through 6 of Table 2. The samples in columns 3 and 4 are restricted to nearest-neighbor matches based on estimates of individuals' propensity to have private insurance. These samples match quite closely in terms of the fraction uninsured and the fraction with private insurance. However, there is still a significantly higher probability that individuals in treatment states had Medicaid coverage at some point during a given calendar year.[29] The samples in columns 5 and 6 exclude individuals in households that either have incomes less than 133% of the poverty line or that have a single mother as the household head. These are the primary groups for which Medicaid eligibilty varied across the treatment and control states, and this restriction brings the difference between the treatment and control groups below 2 percentage points. Exclusion of these groups also generates a sample that is unlikely to have been affected by policy changes associated with the implementation of welfare reform in 1996. The remaining panels of Figure 1 provide evidence of parallel pre-regulation trends for each of these samples.

Differences in the socioeconomic characteristics of the treatment and control samples merit additional discussion. Conditional on measured socioeconomic characteristics, individuals are more likely to have private coverage in the treatment states than in control states. To adjust for this I allowed the relationship between insurance coverage and variables related to income, race, and household structure to vary across the census regions.[30] I chose the degree of flexibility to ensure that the treatment and control samples match on their baseline coverage rates when they match on their average propensity scores. This is indeed the case in columns 3 through 6 of Table 2.[31] Differences be-

[29]A modestly larger share of individuals in the comprehensively regulated states had both public and private coverage at some point during the relevant calendar years.

[30]The same set of interactions between these socioeconomic variables and census-region indicator variables are used as control variables throughout the analysis.

[31]When I do not allow these relationships to vary across regions, samples with the same average propensity score tend to yield significantly higher baseline private coverage rates in the treatment group

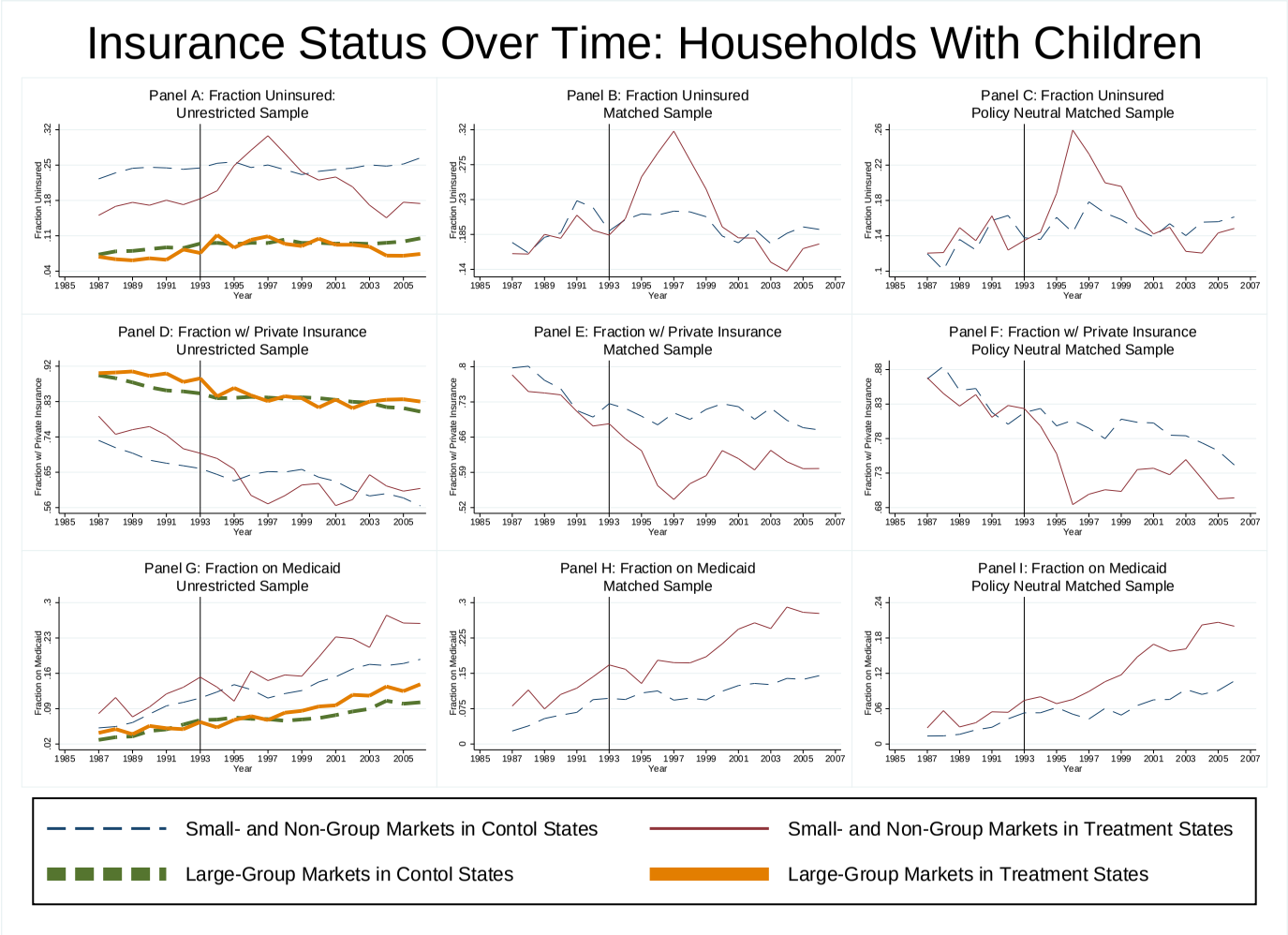


Figure 1: **Insurance Status Over Time: Households with Children.** The figure contains tabulations constructed using the March Demographic Supplement of the Current Population Survey (CPS). All samples consist of the adults and children (aged 18 and lower) in households with at least one child and at least one full-time working adult. The samples in Panels B, E, and H are restricted to matched pairs, constructed as described in the text. The samples in Panels C, F, and I are further restricted to exclude individuals in households with incomes less than 133% of the poverty line or headed by single mothers. The treatment states in all panels include New York, Maine, and Vermont, which were the three states to adopt fully adopt their comprehensive regulatory regimes in 1993 (as indicated by the vertical black lines in each panel). In Panels A, D, and G, which display coverage rates in states' large-group markets as well as in their non- and small-group markets, individuals are defined as having access to the large-group market if at least one adult in the household is employed at a firm with more than 100 employees (and to the non- and small-group markets otherwise). Insurance status is taken directly from the Minnesota Population Center's Summary Health Insurance variables, which are imputed using the CPS.

sured returns to its pre-regulation levels. This comes from a combination of increases in public coverage, as demonstrated by the positive and statistically significant coefficients at the bottoms of columns 5 and 6, and through partial recoveries of private coverage. The recovery of private coverage is largest with the full matched sample. For the sample that excludes individuals with incomes less than 133% of the poverty line, most of the decline in the fraction uninsured comes through increases in Medicaid coverage. This sub-sample is more strongly weighted towards households with members who would have become eligible for Medicaid during the latter half of the sampling frame.[33]

The coverage declines observed through 1996 and 1997 are much larger than estimates found elsewhere in the literature on insurance-market regulations. While this is due in part to the sample's exclusion of childless adults, it is primarily due to the distinction between instantaneous and medium-run impacts.[34] Past work has averaged its estimates of the effects of premium regulations across several years following their implementation. Since adverse selection spirals take time to unfold (see, e.g., Cutler and Reber (1998)), this will understate the full impact of implementing regulations. The samples in earlier work also tended to end prior to 1997 (see, e.g., Buchmueller and DiNardo (2002), and Simon (2005)), which was a year during which the regulated markets performed poorly. If I average across post-reform years, end the sample in 1996, and include childless adults, I come close to replicating the results from prior work.

[33]Prior to Medicaid expansions for children during the early 2000s, this group also experienced a substantial recovery in their private coverage rates, as can been seen by comparing the coefficient of -.0386, which corresponds to years 2001 and 2002, with the low of -0.0854 experienced during 1996 and 1997.

[34]I focus on households with children because state Medicaid expansions for single adults were modest. It is the interaction of these Medicaid expansions with state regulatory environments that is this paper's focus.

**Table 3: Insurance Coverage for Individuals in Households with Children**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Dependent Variable: Coverage Status | Private | | Uninsured | | Medicaid | |
| Sample | All Matched | Policy Neutral | All Matched | Policy Neutral | All Matched | Policy Neutral |
| Years Since Enactment: -6 to -5 | 0.00724 | -0.0135 | -0.00407 | 0.0145 | -0.00742 | -0.00417 |
| | (0.0202) | (0.0193) | (0.0196) | (0.0190) | (0.0124) | (0.0121) |
| Years Since Enactment: -4 to -3 | 0.0108 | -0.0239 | 0.0129 | 0.0307 | -0.0371*** | -0.0212* |
| | (0.0190) | (0.0182) | (0.0202) | (0.0201) | (0.0130) | (0.0118) |
| Years Since Enactment: -2 to -1 | 0.00456 | -0.0271 | 0.00864 | 0.0269 | -0.0134 | 0.00119 |
| | (0.0243) | (0.0209) | (0.0227) | (0.0240) | (0.0111) | (0.0142) |
| Years Since Enactment: +1 to +2 | -0.0300 | -0.0400* | 0.0484** | 0.0402* | -0.0478*** | -0.0219* |
| | (0.0239) | (0.0217) | (0.0207) | (0.0216) | (0.0163) | (0.0130) |
| Years Since Enactment: +3 to +4 | -0.101*** | -0.0854*** | 0.0839*** | 0.0681** | 0.000986 | 0.0102 |
| | (0.0164) | (0.0246) | (0.0223) | (0.0262) | (0.0161) | (0.0112) |
| Years Since Enactment: +5 to +6 | -0.0837*** | -0.0707*** | 0.0630*** | 0.0386** | 0.0000 | 0.0217* |
| | (0.0209) | (0.0221) | (0.0198) | (0.0182) | (0.0138) | (0.0124) |
| Years Since Enactment: +7 to +8 | -0.0675*** | -0.0596** | 0.0317 | 0.0186 | 0.0312** | 0.0507*** |
| | (0.0232) | (0.0222) | (0.0214) | (0.0206) | (0.0120) | (0.0156) |
| Years Since Enactment: +9 to +10 | -0.0440 | -0.0386 | -0.00644 | -0.00242 | 0.0329* | 0.0296 |
| | (0.0288) | (0.0333) | (0.0217) | (0.0237) | (0.0191) | (0.0295) |
| Years Since Enactment: +11 to +13 | -0.0492 | -0.0666 | -0.0150 | -0.00476 | 0.0622*** | 0.0805*** |
| Observations | 78,134 | 59,052 | 78,134 | 59,052 | 78,134 | 59,052 |

***, **, and * indicate statistical significance at the .01, .05, and .10 levels respectively. Standard errors, reported beneath each point estimate, allow for clusters at the state level. The samples in these specifications are the same as those used in Figure 1. The sample of comprehensively-regulated states consists of New York, Maine, and Vermont. The "Years Relative to Enactment" indicators are set equal to 1 (on a state-specific basis) when observations occur the indicated number of years since 1993, which is the year in which New York, Maine, and Vermont implemented their comprehensive regulations. All specifications control for state and year fixed effects and a set of indicators for each of the matched pairs in the sample. Additional controls include a set of 2-digit occupation dummy variables, region dummy variables interacted with family income as a percent of the poverty line, an indicator for having a single mother as the household's head, and an indicator for being black, additional indicators for having two full time workers in the household and for the education levels of household adults, an indicator for home ownership, and age group indicators.

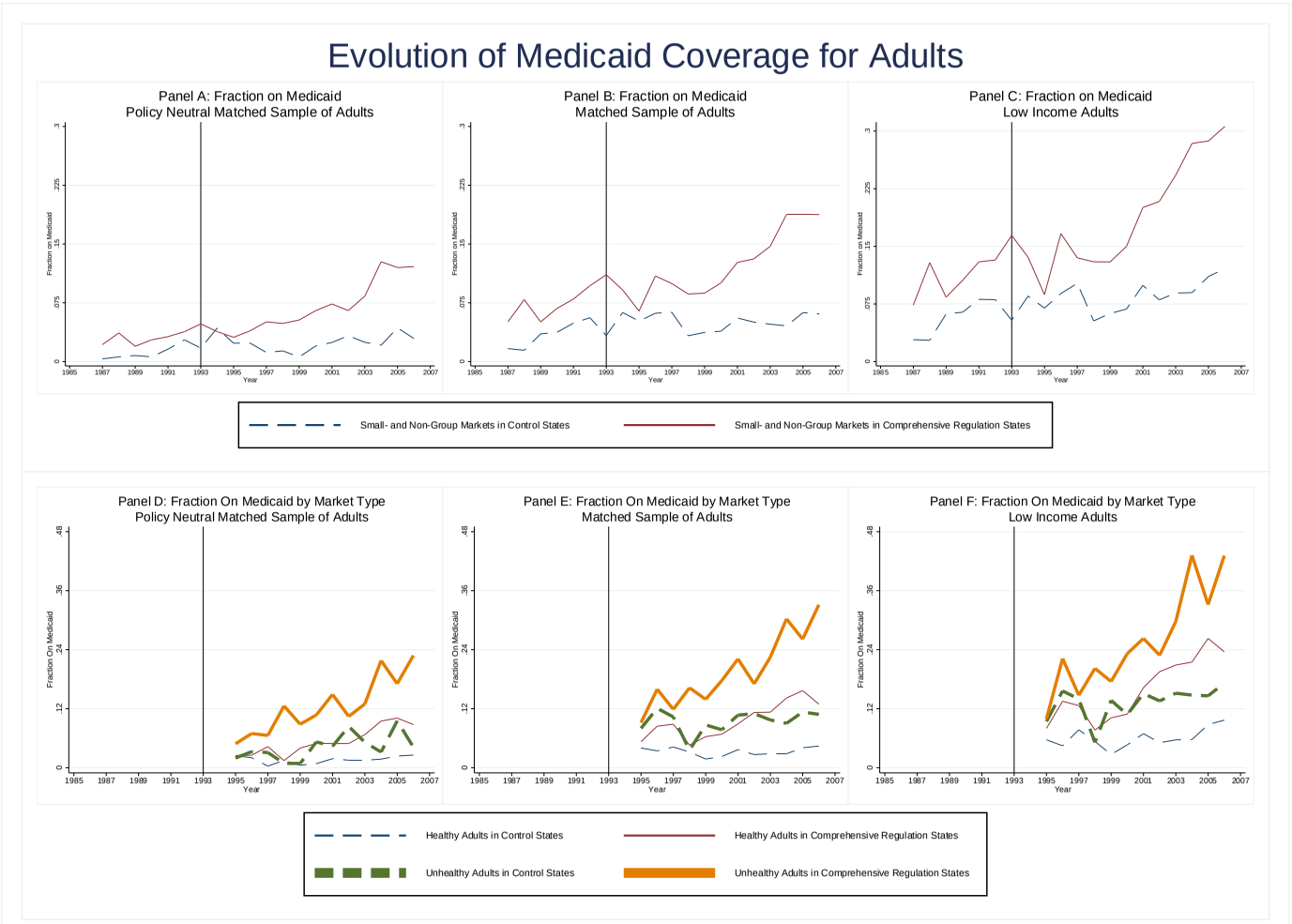


Figure 2: **Evolution of Medicaid Coverage for Adults.** The figure contains tabulations constructed using the March Demographic Supplement of the Current Population Survey (CPS). All samples consist solely of adults (aged 21 and higher) in households with at least one child and at least one full-time working adult, but with no adults working at a firm with more than 100 employees. The samples in Panels A and D are restricted to the adults from Panel I of Figure 1, while the samples in Panel B and E are restricted to adults from Panel H of Figure 1. The samples in Panels C and F are otherwise unrestricted samples of low income adults in households with at least one child, with at least one working adult, and with household income less than 300% of the federal poverty line. The treatment states in all panels include New York, Maine, and Vermont, which were the three states to adopt fully adopt their comprehensive regulatory regimes in 1993 (as indicated by the vertical black lines in each panel). Healthy adults are those with self-reported health status of Excellent or Very Good and with no self-reported work disability. Unhealthy adults are the complement to the sample of healthy adults. Insurance status is taken directly from the Minnesota Population Center's Summary Health Insurance variables, which are imputed using the CPS.

**Table 4: Medicaid Coverage for Adults in Households with Children**

| Dependent Variable: Medicaid Coverage | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Sample | All Matched | Healthy Matched | Unhealthy Matched | All Low Income | Healthy Low Income | Unhealthy Low Income |
| Years Since 95to97: +1 to +2 | 0.00973 | -0.0115 | 0.0463* | 0.0202 | 0.00712 | 0.0335 |
| | (0.0197) | (0.0216) | (0.0234) | (0.0268) | (0.0291) | (0.0216) |
| Years Since 95to97: +3 to +4 | 0.0285* | 0.0146 | 0.0646* | 0.0489* | 0.0407* | 0.0660* |
| | (0.0147) | (0.0120) | (0.0348) | (0.0287) | (0.0232) | (0.0374) |
| Years Since 95to97: +5 to +6 | 0.0555** | 0.0456** | 0.0705* | 0.0815** | 0.0907*** | 0.0600 |
| | (0.0230) | (0.0210) | (0.0354) | (0.0304) | (0.0257) | (0.0374) |
| Years Since 95to97: +7 to +9 | 0.0909*** | 0.0639*** | 0.152*** | 0.132*** | 0.109*** | 0.177*** |
| | (0.0188) | (0.0175) | (0.0270) | (0.0326) | (0.0307) | (0.0314) |
| Observations | 24,190 | 17,116 | 7,074 | 81,332 | 51,841 | 29,491 |

***, **, and * indicate statistical significance at the .01, .05, and .10 levels respectively. Standard errors, reported beneath each point estimate, allow for clusters at the state level. The reported estimates are from regressions similar to those described by equation (8) and reported in Table 3. Due to the lack of information on self-reported health prior to Current Population Surveys describing insurance status for 1995, the sample contains only the years 1995 through 2006. The reported coefficients thus describe changes in Medicaid coverage for the relevant populations from a 1995-1997 base period through the years referenced in the variable names (e.g., +1 to +2 corresponds to 1998 and 1999). The samples in columns 1 through 3 are the same as those used in Panels B and E of Figure 2, while the samples in columns 4 through 6 are the same as those used in Panels C and F. The sample of comprehensively-regulated states consists of New York, Maine, and Vermont. All specifications control for state and year fixed effects. Additional controls include a set of 2-digit occupation dummy variables, region dummy variables interacted with family income as a percent of the poverty line, an indicator for having a single mother as the household's head, and an indicator for being black, additional indicators for having two full time workers in the household and for the education levels of household adults, an indicator for home ownership, and age group indicators.

**Table 5: Coverage Changes in Regulated Markets: Private Coverage and the Fraction Uninsured**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: Coverage Status | Private | Private | Uninsured | Uninsured |
| *Panel A:* | Effects of Adopting Regulations | | | |
| Small Firm x Comm. Rating State x Post Regulation | -0.0941*** | -0.0801*** | 0.0898*** | 0.0794*** |
| | (0.00718) | (0.0124) | (0.00910) | (0.0155) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D |
| Observations | 520,943 | 571,473 | 520,943 | 571,473 |
| *Panel B:* | Effects of Adopting Regulations | | | |
| Small Firm x Comm. Rating State x Post Regulation | -0.109*** | -0.103*** | 0.0841*** | 0.0959*** |
| | (0.0101) | (0.0106) | (0.026) | (0.0163) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D | D-in-D | D-in-D | D-in-D |
| Observations | 136,062 | 148,042 | 136,062 | 148,042 |
| *Panel C:* | Post-1997 Recoveries of Regulated Markets | | | |
| Small Firm x Comm. Rating State x Post 1997 | 0.0768*** | 0.0530** | -0.0824*** | -0.0487** |
| | (0.0120) | (0.0209) | (0.0101) | (0.0223) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D |
| Observations | 548,205 | 591,787 | 548,205 | 591,787 |
| *Panel D:* | Post-1997 Recoveries of Regulated Markets | | | |
| Small Firm x Comm. Rating State x Post 1997 | 0.0882*** | 0.0652*** | -0.111*** | -0.0694** |
| | (0.0171) | (0.0224) | (0.0120) | (0.0280) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D | D-in-D | D-in-D | D-in-D |
| Observations | 155,501 | 167,030 | 155,501 | 167,030 |

***, **, and * indicate statistical significance at the .01, .05, and .10 levels respectively. Standard errors, reported beneath each point estimate, allow for clusters at the state level. The samples in Panels A and B consist of individuals in households with at least one child and one full-time employed adult from the March Current Population Survey in years 1987-1992 and 1996-1997. The samples in Panels C and D consist of similarly situated households from 1996-1997 and 2003-2006. Each estimate comes from a separate OLS regression. In Panels A and C, they are point estimates on a triple interaction between indicators for years following the adoption of comprehensive regulations (Panel A) or years following substantial public insurance expansions (Panel C), residence in a state that adopted comprehensive regulations, and absence of an adult working at a large firm. All specifications control for state, year, and small-firm main effects as well as their two-way interactions. Additional controls include a set of 2-digit occupation dummy variables, region dummy variables interacted with family income as a percent of the poverty line, an indicator for having a single mother as the household's head, and an indicator for being black, additional indicators for having two full time workers in the household and for the education levels of household adults, an indicator for home ownership, and age group indicators. The estimates reported in Panels B and D contain the difference-in-difference counterparts to the triple-difference specifications in Panels A and C. Estimates in columns 2 and 4 utilize the full sample of states while estimates in columns 1 and 3 restrict the sample of treatment states to those that adopted their regulations in 1993.

**Table 6: Coverage Changes in Regulated Markets: Medicaid Coverage**

| Dependent Variable: Coverage Status | (1) All Medicaid | (2) All Medicaid | (3) Unhealthy Adult Medicid | (4) Unhealthy Adult Medicid |
|---|---|---|---|---|
| *Panel A:* | Medicaid Expansions Through 1997 | | | |
| Small Firm x Comm. Rating State x Post Regulation | 0.00915* | 0.00600 | No Health Data Available in the March Demographic Supplements of the Current Population Survey During the Pre-Regulation Period | |
| | (0.00489) | (0.0103) | | |
| Sample of States | Early Adopters | All Comp. | | |
| Estimation Framework | D-in-D-in-D | D-in-D-in-D | | |
| Observations | 520,943 | 571,473 | | |
| *Panel B:* | Medicaid Expansions Through 1997 | | | |
| Small Firm x Comm. Rating State x Post Regulation | 0.00342 | -0.00144 | No Health Data Available in the March Demographic Supplements of the Current Population Survey During the Pre-Regulation Period | |
| | (0.00679) | (0.0133) | | |
| Sample of States | Early Adopters | All Comp. | | |
| Estimation Framework | D-in-D | D-in-D | | |
| Observations | 136,062 | 148,042 | | |
| *Panel C:* | Post-1997 Medicaid Expansions in Regulated Markets | | | |
| Small Firm x Comm. Rating State x Post 1997 | 0.000108 | -0.00661 | 0.0669*** | 0.0292 |
| | (0.00691) | (0.0112) | (0.00769) | (0.0313) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D | D-in-D-in-D |
| Observations | 548,205 | 591,787 | 77,684 | 83,262 |
| *Panel D:* | Post-1997 Medicaid Expansions in Regulated Markets | | | |
| Small Firm x Comm. Rating State x Post 1997 | 0.0265** | 0.00571 | 0.104*** | 0.0526 |
| | (0.0120) | (0.0132) | (0.0174) | (0.0325) |
| Sample of States | Early Adopters | All Comp. | Early Adopters | All Comp. |
| Estimation Framework | D-in-D | D-in-D | D-in-D | D-in-D |
| Observations | 155,501 | 167,030 | 22,027 | 23,521 |

***, **, and * indicate statistical significance at the .01, .05, and .10 levels respectively. Standard errors, reported beneath each point estimate, allow for clusters at the state level. The samples in Panels A and B consist of individuals in households with at least one child and one full-time employed adult from the March Current Population Survey in years 1987-1992 and 1996-1997. The samples in Panels C and D consist of similarly situated households from 1996-1997 and 2003-2006. Each estimate comes from a separate OLS regression. In Panels A and C, they are point estimates on a triple interaction between indicators for years following the adoption of comprehensive regulations (Panel A) or years following substantial public insurance expansions (Panel C), residence in a state that adopted comprehensive regulations, and absence of an adult working at a large firm. All specifications control for state, year, and small-firm main effects as well as their two-way interactions. Additional controls include a set of 2-digit occupation dummy variables, region dummy variables interacted with family income as a percent of the poverty line, an indicator for having a single mother as the household's head, and an indicator for being black, additional indicators for having two full time workers in the household and for the education levels of household adults, an indicator for home ownership, and age group indicators. The estimates reported in Panels B and D contain the difference-in-difference counterparts to the triple-difference specifications in Panels A and C. Estimates in columns 2 and 4 utilize the full sample of states while estimates in columns 1 and 3 restrict the sample of treatment states to those that adopted their regulations in 1993.